

REMARKS

This amendment is being made pursuant to the Office Action mailed January 23, 2007. Claims 1-29 remain pending in the application.

Rejection under 35 U.S.C. § 102(b)

Claims 1, 2, 5, 6, 9, 11, 14, 15 and 21 were rejected as being anticipated by Terasaka (U.S. 5,770,305). This rejection is respectfully traversed.

Initially, it will be noted that minor amendments have been made to claims 14 and 22 to more positively set forth that the SMA particles provide compression-after-impact strength to the adhesive base film (claim 14) or to the adhesive compound (claim 22). Claim 1 already recites that the SMA particles improve an impact resistance of said adhesive base material. This feature is not present in Terasaka or suggested by Terasaka.

Terasaka involves the use of an anisotropic film for conductively coupling the terminals of a liquid crystal display (LCD) to electronic components that will experience heat during their use. The anisotropic conductive film (ACF) disclosed in Terasaka appears to be directed to solving the same problem as Japanese application 6-36613, which was addressed in a previous response submitted by the undersigned. More specifically, Terasaka discloses using conductive particles 44, such as Ni-Ti, that are "crushed by thermo-compression" during manufacture of an electronic circuit assembly such that they remain in a compressed state from a force acting on the ACF during use of the ACF. When a resin 40 in which the Ni-Ti particles 44 are used expands due to a

change in humidity and/or temperature, thus pushing the connection terminals upwardly in the drawing of Figure 4, then the stress acting on the particles 44 is reduced. This allows the particles 44 to expand in the thickness direction of the ACF, thus maintaining electrical conductivity between the connection terminals (col. 3, lines 5-19).

From the above, it will be understood that the Ni-Ti particles 44 are normally held in the crushed orientation. As such, this would essentially destroy any ability of the particles to provide compression-after-impact strength to the ACF. But this construction is necessary if the Ni-Ti particles are going to be able to expand when needed to maintain conductivity.

This is basically the opposite application of Ni-Ti particles that is being claimed in the present application. With the adhesive compound, adhesive film and adhesive paste of the present application, the SMA particles need to be in an uncompressed (i.e., austenite) state in order to be able to provide any meaningful compression-after-impact strength to the compound, film or paste. Thus, the way in which the Ni-Ti particles are used in Terasaka actually teaches away from the way SMA (i.e., Ni-Ti) particles need to be used in the presently claimed adhesive film, compound or paste to provide the claimed benefit of improved impact resistance.

The claimed subject matter of the present application is significantly different than what is disclosed in Terasaka. The adhesive film, paste and compounds of the present application exploit the significant energy dissipating ability of shape memory alloys when the SMA particles undergo deformation by the force of an impact (for an SMA particle filled compound, film or adhesive layer). When the SMA particles are impacted, they physically deform and transform the kinetic energy of impact to thermal

energy in the form of heat release, dissipating the impact energy, thereby protecting the host material. The deformation of the SMA particles can only occur if they not already being compressed (i.e., deformed) by some external force.

In view of this important difference from the construction disclosed in Terasaka, reconsideration and withdrawal of the rejection of claims 1, 2, 5, 6, 9, 11, 14, 15 and 21 is respectfully requested.

Rejection Under 35 U.S.C. §103(a)

Claims 1-29 were rejected as being obvious over Terasaka in view of Yliopisto ("Fundamental Characteristics of Nickel-Titanium Shape Memory Alloy"). Principally for the above reasons, this rejection is also respectfully traversed. While Yliopisto discusses the "Superelasticity Effect" that SMAs provide, there is absolutely no suggestion of using SMA particles in an adhesive compound, adhesive film or adhesive paste to impart compression-after-impact strength to the base substance. It is respectfully submitted that combining the teachings of Yliopisto with those of Terasaka would not have been obvious to one skilled in this art because there would no benefit to including the SMA particles in their "uncompressed" (i.e., its austenite) state in the ACF material disclosed in Terasaka. In fact, using the SMA particles in their uncompressed state would essentially destroy the ability of the SMA particles to "expand" as the external loads acting on the ACF material release the compressive force on the ACF material. Accordingly, this would render the ACF film useless for its principal purpose (i.e., maintaining electrical conductivity between two external electrical terminals as the resin of the ACF expands).

No Motivation To Combine References

The Examiner will appreciate that it is well established by the CAFC that there must be some teaching, motivation or desirability to combine the prior art references. A general relationship between fields of the prior art patents that are being combined is not sufficient to establish the suggestion or motivation. See e.g., C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352 (Fed. Cir. 1998). A general relationship between the fields of the prior art references is not sufficient to establish the required “suggestion” or “motivation”. Interactive Techs., Inc. v. Pittway Corp., Civ. App. No. 98-1464, slip op. at 13 (Fed. Cir. June 1, 1999) (unpublished), cert. denied, 528 U.S. 1046 (1999).

Furthermore, the Federal Circuit has stated:

The genius of invention is often a combination of known elements which in hindsight seems preordained. To prevent hindsight invalidation of patent claims, the law requires some “teaching, suggestion or reason” to combine the cited references. . . . When the art in question is relatively simple, as is the case here, the opportunity to judge by hindsight is particularly tempting. Consequently, the tests of whether to combine references need to be applied rigorously.

McGinley v. Franklin Sports Inc., 262 F.3d 1339, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) (citing Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ 2d 1378, 1383 (Fed. Cir. 1997)).

In this example, there is nothing from the references themselves that would suggest to the skilled artisan the desirability of combining the references as the Examiner has done. Accordingly, it is respectfully maintained that the combination of

references applied by the Examiner has been made in hindsight using the pending claims as a road map.

References Cannot Be Combined If the Modification Would Render the Prior Art Unsatisfactory For Its Proposed Purpose

It is also well established that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900,221 USPQ 1125 (Fed. Cir. 1984) MPEP 2143.01.

Additionally, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959) MPEP 2143.01.


In the present case, incorporating the superelastic qualities discussed in Yliopisto into the ACF material disclosed in Terasaka would destroy the characteristic (i.e., expandability) that the Ni-Ti particles are being used for in Terasaka. Thus, it is respectfully submitted that this forms an additional basis for supporting the assertion that it is improper to combine the Terasaka and Yliopisto references as the Examiner has done.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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